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**Observation of coral reefs on Ishigaki island, Japan, using Landsat TM images and aerial photographs**

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**Abstract:**

Ishigaki island is located at the southwestern end of the Japanese archipelago and famous for its fringing coral reefs. More than twenty Landsat TM images covering 12 years and aerial photographs taken in 1977 and 1994 were used to survey two shallow reefs on this island, Shiraho and Kabira. Intensive field surveys were also conducted in 1995. All satellite images of Shiraho were geometrically corrected and overlaid to construct a multirate satellite data set. The effects of solar elevation and tide on satellite imagery were studied with this data set. The comparison of aerial and satellite images indicated that significant changes occurred between 1977 and 1984 in Kabira: rapid formation in the western part and decreases in the eastern part of dark patches. The field surveys revealed that newly formed dark patches in the west contain young corals. These results suggest that remote sensing is useful for not only mapping but also monitoring of shallow coral reefs. (Author)